https://doi.org/10.26069/graynet-2025-000.791-gn

Supporting the Research Synthesis Process

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Abstract:
Systematic reviews are growing in popularity amongst researchers. This is especially true in the clinical sciences, education, and social sciences, where practitioners seek to use statistical analyses to answer questions from a large corpus of knowledge.
This poster demonstrates an overview of the research synthesis process and presents a case study of a collaborative effort between researchers which was published as an open access article in *Educational Psychology Review.* The review looked into media comparison studies of Immersive Virtual Reality (IVR) to understand whether specific IVR features, or "affordances," contribute to enhanced learning outcomes. The goal of the review was to determine whether the current literature base allows for the isolation of these factors while controlling the instructional methods and content of the lessons.

What are Systematic Reviews?

- Research products that draw conclusions based on a combination of other studies. A strong systematic review:
  - Builds on the conclusions of empirical studies
  - Increases the sample size of information from which conclusions can be drawn
  - Uses statistical analyses
  - Start with rigorously designed literature searches
  - Done by a group of researchers so that consensus can be reached

Method Recommendations:

- **Be Meticulous**
  - Register in the **Open Science Framework**
  - Register with **PROSPERO**, the International Prospective Register of Systematic Reviews
  - Create reproducible work
  - Start with **PRISMA**, the Preferred Reporting Items for Systematic Reviews and Meta-Analyses
  - PRISMA provides standardized checklists for specific research fields
  - PRISMA provides a guide to the elements necessary for inclusion of systematic review and meta analyses papers

- **Determine your Parameters**
  - Be aware of databases that cover your topic and the types of documents they contain
  - Choose to include grey literature
  - This study used articles, dissertations, and conference papers

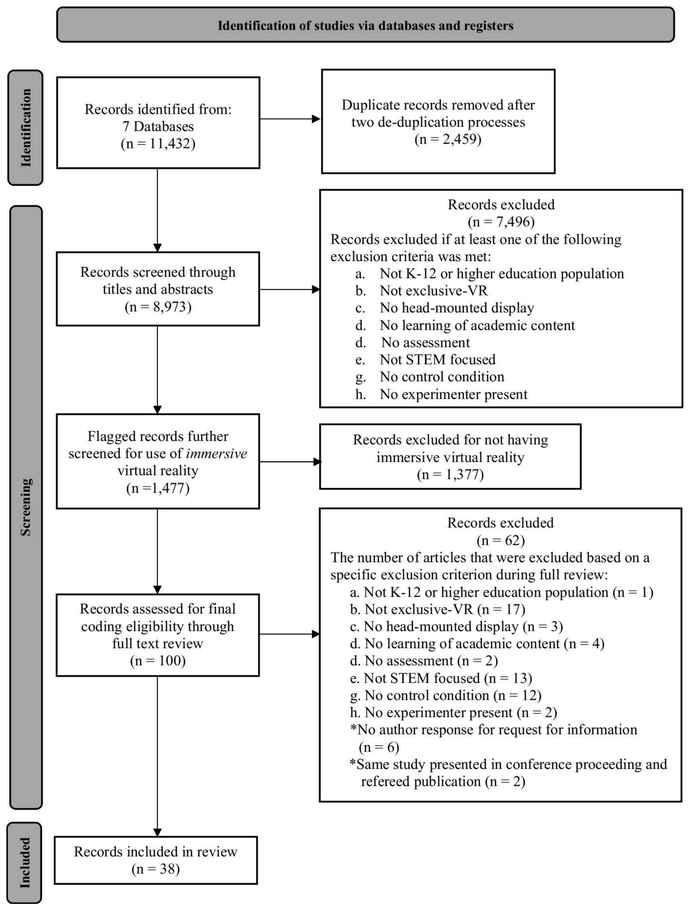
Search Methods for this Study:
Limit to: articles, PhD Dissertations, conference papers from 2013-2023
In: *OpenDissertations, ProQuest Dissertations and Theses A&I, Compendex, Web of Science, ERIC, PubMed,* and *PsycInfo*

[IN ABSTRACT]
(("virtual reality" OR "head mounted display" OR "head-mounted display" OR "immersive learning" OR “immersive VR” OR “educational VR” OR “VR learning”)
AND
(training OR education OR educational OR learn OR learning OR classroom OR instruction OR teach OR teaching)
AND
(intervention* OR experiment* OR empirical OR control OR treatment* OR quantitative OR group))
NOT [IN TITLE]
(“systematic review” OR “meta analysis” OR meta-analysis OR “case study” OR rehabilitati* OR elderly OR animal* OR “intellectual disabilit*” OR “physical disabilit*”)

1. Imported and deduplicated 10,000 results into Zotero
2. Imported records into Rayyan, which is a low cost systematic review program that utilizes AI
3. Searched for specific keywords in titles and abstracts
4. Reviewed final 38 documents

How do you ensure that **systematic reviews** are **reproducible, transparent**, and **accessible?**

PRISMA Flow Chart



Takeaways from this Study:

- 12% of the final coded literature did not provide a clear control condition.
- Future research should carefully address issues related to the design of conventional and IVR conditions in media comparison studies of the effects of different IVR and conventional interventions and move toward being able to provide more practical implementation recommendations.
- Researchers and editors need to ensure the IVR and conventional conditions in each study are well described, with specific methods and procedures outlined clearly.
- Many articles presented incomplete information about the ways in which their conditions were designed and implemented.
- Researchers need to intentionally design both the IVR and conventional conditions in media comparison research according to the research question of interest.
- Studies need to control and isolate variables.

References:

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